REMARKS

Upon entry of the foregoing amendments, Claims 1-8 and 10-21 are pending in this application. The Examiner rejected Claims 1-4, 7-10 and 12-14 under 35 U.S.C. 112, second paragraph, rejected Claims 6-9 under 35 U.S.C. 102(b), rejected Claims 1-4, 10 and 12-14 under 35 U.S.C. 103(a), and indicated that Claims 5 and 11 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. Claims 1-4, 6-8, 10 and 12-14 have been amended, Claim 9 has been cancelled, and Claims 15-21 have been added in the foregoing amendment. No fees are believed due; however, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account 11-0855.

Claims 1-4, 7-8, 10 and 12-14 Are Definite

The Examiner rejected Claims 1-4, 7-10 and 12-14 as being indefinite. Applicant amended Claims 1-4, 7-8, 10 and 12-14 to clarify the invention. Thus, Claims 1-4, 7-8, 10 and 12-14 should now be definite.

Edelman Does Not Anticipate Claims 6-8

The Examiner rejected Claims 6-9 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,136,687 to Edelman et al. ("Edelman"). Applicant traverses this rejection for the reasons discussed below.

Claim 6

A method of generating patterns from input information of amended Claim 6 requires the steps of: entering an input pattern into a network of elements arranged at predetermined intervals, each of the elements directing an input impulse toward a next element, except during a refractory period which exists until predetermined conditions are met; and generating a response rule corresponding to the input pattern according to routes formed by the elements in response to the input pattern, wherein the refractory period of one

of the elements is changed in response to a pattern of stimulations to the element, intervals of stimulations to the element, or a state of the element. The invention of Claim 6 utilizes a time axis and a refractory period to carry information by changing the refractory period in response to a pattern of stimulations to the element, intervals of stimulations to the element, or a state of the element. For example, Fig. 14 shows a plane pattern $P_I(i)$ continuously provided over a given period from an input unit 2 to the preprocessing unit 11. The preprocessing unit 11 accumulates the input patterns $P_I(i)$ along a time axis as shown in Fig. 14(b). The patterns P(I, j, z) are divided into blocks Phz in the direction Z as shown in Fig. 14(c). As shown in Fig. 15, due to the existence of the refractory periods of the elements 10a to 10g, the output information carries information or different patterns along the time axis (in the direction Z).

In contrast, Edelman does not describe utilization of time for carrying information. The patterns along the time axis are all uniform and the information processed is only an output at a single time t. Edelman describes that "the state of each cell is characterized by a single time-dependent scalar variable, Si(t), variously referred to as the state of cell i at time t, or the output of cell i at time t. It is dependent upon 'synaptic strengths,' cij, also referred to as the 'connection strengths.'" Column 3, lines 13-18.

Claim 16 of Edelman describes that two-dimensional patterns or visual scenes are represented as input information. The process described in Edelman is conducted between the information entered in a certain neuron simultaneously within a single time. In contrast, the claimed invention processes input information that is three-dimensional, including a time axis, when the stimulus is planar. The change within the information inputted with a certain interval is caused by a refractory period.

Edelman uses scalar variables for the state of the neurons, whereas the invention of Claim 6 can use binary values due to the changeable refractory period.

Thus, Edelman fails to describe the a refractory period, wherein the refractory period is changed in response to a pattern of stimulations to the element, intervals of stimulations to the element, or a state of the element, as required by amended Claim 6. Thus, Claim 6 should be allowed.

Claims 7 and 8

Claims 7 and 8 directly or indirectly depend from independent Claim 6. The remarks made above in support of patentability of Claim 6 equally apply to distinguish Claims 7 and 8 from Edelman. Thus, Claims 7 and 8 should also be allowed.

Edelman and Ravi Chandran Do Not Show or Suggest the Invention of Claims 1-4, 10, and 12-21

The Examiner rejected Claims 1-4, 10 and 12-14 under 35 U.S.C. 103(a) as being unpatentable over Edelman in view of U.S. Patent No. 5,038,390 to Ravi Chandran ("Ravi Chandran"). This rejection is traversed for the reasons discussed below.

Claim 1

A method of analyzing pattern information pieces of Claim 1 requires, among other elements, repressing a predetermined number of times the calculated activity level of each pattern information piece according to repression rules that are determined in consideration of the activity levels of the other pattern information pieces.

In contrast, Edelman only generally describes repression of responses associated with various combinations of presynaptic activity, postsynaptic activity, and value. Edelman does not describe repression where the activity level of one pattern information piece is repressed based on the activity levels of the other pattern information pieces, as recited by Claim 1, i.e. mutual repression. Ravi Chandran also fails to describe repression where the activity level of one pattern information piece is repressed based on the activity levels of the other pattern information pieces.

Moreover, there is no motivation to combine Edelman and Ravi Chandran in the manner suggested by the Examiner. Edelman requires the use of neural maps or neural networks to control the responses of robotic effector mechanisms to objects within the environment. Edelman alleges that its neural network can learn, as opposed to merely train. Column 40, lines 57-60. Ravi Chandran describes the use of save maps in connection with image processing. A save map is similar to a table and identifies a subset of transform

coefficients. Abstract and Column 3, line 68 – Column 4, line 1. A save map is not a neural network. There is no suggestion in Edelman that the use of save maps would enhance the abilities of its neural network. Nor is there a description in Ravi Chandran of how the neural network described by Edelman could work with the described save maps. Thus, Claim 1 is patentable over the cited references.

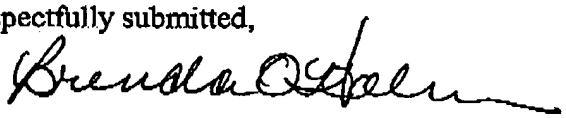
Claims 2 -4, 10, and 12-21

Independent Claims 2, 4, 10, 12 and 14 have limitations that are similar to that of Claim 1. Thus, the remarks made above in support of patentability of Claim 1 also apply to distinguish Claims 2, 4, 10, 12 and 14 from the cited references. Claims 3 and 20 depend from Claim 2, Claims 13 and 21 depend from Claim 12 and Claims 15-19 depend from Claim 4. Thus, Claims 2-4, 10, and 12-21 should also be allowed.

CONCLUSION

The foregoing is submitted as a complete response to the Office Action identified above. This application should now be in condition for allowance, and the Applicants solicit a notice to that effect. If there are any issues that can be addressed via telephone, the Examiner is asked to contact the undersigned at 404.685.6799.

Respectfully submitted,



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